

REMARKS

Claims 1-5 are pending in this application. No amendment has been made herein.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen (U.S. Patent No. 6,311,701) (Office action point 2).

The rejection of claims 1-5 is respectfully traversed.

Applicants first respectfully note that Chen '701 is not, in fact, a reference under 35 U.S.C. 102(b), since the present application is a national stage of an International application with a filing date of July 14, 2000, while Chen '701 was patented on December 18, 2001. However, Chen '701 was filed on May 20, 1999, and therefore will be treated as a reference under 35 U.S.C. 102(e).

In traversing the rejection, Applicants note that in the Examiner's summary of the teachings of Chen in the Office action from page 2 through page 3, line 14, the Examiner does not appear to indicate which elements in Chen correspond to the recited elements in the present claims. In particular, there is no indication of which elements in Chen might correspond to the electrode on the upstream end, the middle electrode and the electrode on the downstream end, recited in claim 1. The Examiner also never states what part of Chen refers to the discharge tube.

The Examiner refers to Chen's RF generator 11, RF inductor 13, and RF window 14, and to the sub-Debye neutralizer grid 112, which are shown in Fig. 1. However, Applicants can find no clear description of a discharge tube. Applicants are unclear which element in Chen's Fig. 1 corresponds to the plasma-generating means, and no element in this Figure would appear to have the structural limitations of the plasma-generating means of claim 1. For example, RF accelerator 17

appears to be parallel to grid 112, and RF inductor 13 is apparently the RF coil (column 6, line 13), which can be any convenient shape. More significantly, there is no clear disclosure of three electrodes and no relationship between the RF coil and any electrode such as is recited in claim 1.

Although Chen's Fig. 2 is not specifically referenced in the Office action, Applicants here also discuss the teachings of Chen in the beam source disclosed in Fig. 2. In this figure, Chen discloses dielectric tube 29, which may be taken as a "discharge tube"; gas inlet 24; RF accelerator 27 and sub-Debye neutralizer grid 214, which may be taken as two electrodes; coil 210, which may be taken as a plasma generating means; and RF generator 21, which may be taken as a voltage applying means.

However, Applicants can find no specific description of three electrodes mounted in Chen's RF accelerator which would correspond to the three electrodes of claim 1. In particular, there is no analogue in Chen of the recited mesh-shaped middle electrode disposed between upstream end and downstream end electrodes. Likewise, Chen's Figures 8 and 11 also appear to show only the grid 814 at the downstream end.

Moreover, present claim 1 recites a clear relationship between the plasma forming means (coil) and the two upstream electrodes, which does not appear to have any analogue in Chen.

In addition to these arguments against anticipation of claim 1 by Chen, Applicants further assert that there is no suggestion in Chen for the structure recited in claim 1. In the present invention, ions are extracted through the middle electrode of mesh-shaped type from high density plasma, which is formed between the upstream electrode and the mesh electrode by plasma generating means (coils). Thus, high density plasma formed on the upstream side of the electrode is efficiently

introduced between the two electrodes on the downstream end for generating a highly ionized and relatively broad beam having good directionality (see specification, page 4, lines 7-21). There is no suggestion in Chen for this concept.

The Examiner also argues, with respect to claim 2, that “It is well known in the art to apply the same potential to the “beam emitting” electrode and the chamber into which the beam is emitted, as recited in claim 2, ...” Similarly, the Examiner states “... a distance of 5 millimeters or greater’, as recited in Claim 3, is a common design choice” Applicants respectfully note that these are improper arguments for an anticipation rejection under 35 U.S.C. 102, as they are implying that Chen must be modified to meet the limitations of the claims. Such arguments would be appropriate only in an obviousness rejection under 35 U.S.C. 103(a).

Applicants have noted above, however, that Chen does not disclose or suggest the three electrodes as recited in the present claims. Therefore, the Examiner’s proposed modifications could not even be made to Chen. Applicants therefore submit that the Examiner’s statement that “it is well known in the art to apply the same potential to the “beam emitting” electrode and the chamber into which the beam is emitted” is incorrect.

Applicants therefore respectfully assert that claims 1-5 are not anticipated by, and moreover are non-obvious over, Chen ‘701.

Response under 37 CFR 1.111
Masahiro HATAKEYAMA et al.

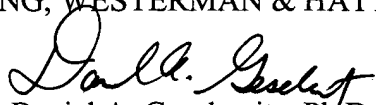
U.S. Patent Application Serial No. 10/030,087
Attorney Docket No. 020018

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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